

CHAPTER 2J  
DRILLING FOR SUBSURFACE INVESTIGATIONS

2J-01. GENERAL

This chapter covers the investigation of the distribution, type, and physical properties of subsurface materials. These investigations pertain to foundations, borrow, and ground water.

Subsurface investigations are usually accomplished by drilling, auger boring, or excavating test pits, trenches, or shafts.

2J-02. GENERAL REQUIREMENTS

a. Type of Investigation - Check purpose, depth, type of materials, ground water conditions, underground utilities prior to start.

b. Equipment

(1) Check that requirements to be used will serve intended purpose.

(2) Study usages of various types of equipment.

c. Reports

(1) Check with supervisor as to reports required and data to be submitted.

(2) Understand reasons for report data requirements.

d. Markers - Check for installation of permanent exploration markers.

2J-03. SURVEY CONTROL

a. Location

(1) Check each exploration is located accurately by tie-in to survey grids or established base lines.

(2) Check elevations are established from existing vertical control.

(3) Check permissible variation of locations.

(a) Foundation Exploration - Minor only.

(b) Borrow Exploration - Reasonable.

2J-04. SAMPLES

a. Type

(1) Representative disturbed

(2) Undisturbed

(3) Bedrock.

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b. Handling

(1) Check sample to assure it is representative of the material. Do not scalp over, undersize, or blend materials from layers or lenses.

(2) Check that all samples are protected from jarring, vibration, and exposure to heat or frost.

(a) Check method of packing.

(b) Check transportation.

(3) Check that each sample is identified.

(4) Check need for moisture content testing.

2J-05. OPERATION

a. General

(1) Check that written permission for right of entry has been obtained from landowner, if appropriate.

(2) Check for authorization from installation commander.

(3) Check requirements for fencing, covering, or closure of pits.

(4) Check backfilling and grading of excavation.

b. Drilling and Sampling

(1) Recheck purpose versus type of equipment.

(a) Record penetration resistance.

(b) Apply soils classification to soil samples.

(c) Check cleaning out of casing prior to undisturbed sampling.

(d) Check use of drilling mud in lieu of casing.

(e) Check level table during drilling.

c. Drilling Grout and Drain Holes

(1) Check drill hole location plan.

(2) Check that peripheral grout holes are drilled and grouted according to the specified grouting plan.

(3) Check that drain holes are not drilled until all adjacent grout holes have been completed.

d. Drilled Water Wells

(1) Check for placement of casing pipe in overburden portion of well.

(2) Check that pipe extends above ground surface.

- (3) Check for inner casing if required.
- (4) Check for grouting between casings.
- (5) Check for alignment and plumbness of casing and rock hole.
- (6) Check setting of well screen in well drilled only in soil.
- (7) Check that well is capped if permanent pump is not installed.

e. Test of Wells for Yield and Drawdown

- (1) Check depth of static water before pumping.
- (2) Check volume pumped.
- (3) Check depth after pumping.
- (4) Check recovery rate.
- (5) Monitor observation wells, if available, frequently.